

Please amend Claim 3 as follows:

3. (Amended) A method for determining the work of the heart of a living being, said method comprising the steps of:

(a) measuring the viscosity of the circulating blood of the living being over a plurality of shear rates;

(b) detecting a pressure pulse of the heart of the living being; and

(c) determining the work of the heart from a combination of said viscosity of the circulating blood of, and the pressure pulse of the heart of, the living being and wherein said step of determining the work of the heart

(WOH) is defined as:

$$WOH = \frac{\pi d^4}{128TL} \int_0^T \frac{P^2(t)}{\mu(t)} dt$$

where:

T is a period of one cardiac cycle;

P(t) is the pressure pulse of the heart;

d represents the average inside diameter of the entire vascular system from the heart to the vein;

L represents the average length of blood vessels from the heart to vein; and

$\mu(t)$ is said viscosity of the circulating blood over a plurality of shear rates.

Please cancel Claims 4-6.

Please amend Claim 7 as follows:

7. (Amended) A method for reducing endothelial cell dysfunction in a living being which is caused by oscillating flow of the circulating blood of the living being, said method

comprising the step of reducing the rate of ejection of the blood from the heart of the living being and wherein said step of reducing the rate of ejection of the blood from the heart comprises administering a β -blocker to the living being.

[Please amend Claim 8 as follows:]

8. (Amended) A method for reducing endothelial cell dysfunction in a living being which is caused by oscillating flow of the circulating blood of the living being, said method comprising the step of reducing the rate of ejection of the blood from the heart of the living being and wherein said step of reducing the rate of ejection of the blood from the heart comprises minimizing or eliminating smoking by the living being.

[Please amend Claim 9 as follows:]

9. (Amended) A method for reducing endothelial cell dysfunction in a living being which is caused by oscillating flow of the circulating blood of the living being, said method comprising the step of reducing the rate of ejection of the blood from the heart of the living being and wherein said step of reducing the rate of ejection of the blood from the heart comprises minimizing or eliminating the ingestion of caffeine by the living being.

[Please amend Claim 10 as follows:]

10. (Amended) A method for reducing endothelial cell dysfunction in a living being which is caused by oscillating flow of the circulating blood of the living being, said method comprising the step of reducing the rate of ejection of the blood from the heart of the living being and wherein said step of reducing the rate of ejection of the blood from the heart comprises ingesting of alcohol by the living being.

Please cancel Claims 11-13.

Please amend Claim 14 as follows:

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14. (Amended) A method for reducing endothelial cell dysfunction in a living being which is caused by oscillating flow of the circulating blood of the living being, said method comprising the step of reducing the viscosity of the circulating blood of the living being and wherein said step of reducing the viscosity of the circulating blood of the living being comprises administering fish oil to the living being.

Please cancel Claims 15-27.

Please cancel Claims 42-43.

Please cancel Claim 45.

Please amend Claim 46 as follows:

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46. (Amended) An apparatus for determining the deformability of red blood cells of the circulating blood of a living being, said apparatus comprising a plurality of tubes closely adjacent one another and each having an inner diameter different from its neighbor, each of said plurality of tubes having an opening exposed to a flow of circulating blood and each of said tubes being closed at its other end for collecting red blood cells therein and wherein the inner diameters of said plurality of tubes is within the range of 1 μ m to 10 μ m.
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[Please amend Claim 47 as follows:]

47. (Amended) An apparatus for determining the deformability of red blood cells of the circulating blood of a living being, said apparatus comprising:

a plurality of tubes closely adjacent one another and each having an inner diameter different from its neighbor, each of said plurality of tubes

having an opening exposed to a flow of circulating blood and each of said tubes being closed at its other end for collecting red blood cells therein;

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an illuminator for passing light through each one of the plurality of tubes as they collect red blood cells in accordance with their respective inner diameters and wherein respective light rays, of varying degrees of redness corresponding to the amount of red blood cells collected in each of said plurality of tubes, emerge from said plurality of tubes; and

a redness color detector for detecting the degree of redness of each of said emerging light rays corresponding to each of said plurality of tubes.

Please cancel Claim 48.

Please amend Claim 49 as follows:

49. (Amended) An apparatus for detecting the lubricity of the circulating blood of a living being as the blood travels through the vascular system of the living being, said apparatus comprising:

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(a) a transparent tube for passing a falling column of the circulating blood of the living being;

(b) an illuminator for directing light at a portion of said transparent tube that contains a residue left by said falling column;

(c) a detector for detecting any light that passes through the transparent tube and residue and generating corresponding detection data, said detector comprising a charge coupled device chip that generates pixel Gray scale values for said detection data; and

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(d) calculator for receiving said detection data and generating a lubricity value based on said detection data.

Please cancel Claim 51.

Please amend Claim 52 as follows:

52. (Amended) An apparatus for effecting the viscosity measurement of circulating blood in a living being, said apparatus comprising:

a lumen arranged to be coupled to the vascular system of the being;

a pair of tubes having respective first ends coupled to said lumen for receipt of circulating blood from the being, one of said pair of tubes comprising a capillary tube having some known parameters;

a valve for controlling the flow of circulating blood from the being's vascular system to said pair of tubes; and

an analyzer, coupled to said valve, for controlling said valve to permit the flow of blood into said pair of tubes whereupon the blood in each of said pair of tubes assumes a respective initial position with respect thereto, said analyzer also being arranged for operating said valve to isolate said pair of tubes from the being's vascular system and for coupling said pair of tubes together so that the position of the blood in said pair of tubes changes, said analyzer also being arranged for monitoring the blood position change in at least one of said tubes and calculating the viscosity of the blood based thereon, said analyzer comprising an indicator that generates an indication as to movement of the blood in at least one of said pair of tubes and wherein

said indicator comprises a flashing light whose flash rate is proportional to the movement of blood in at least one of said pair of tubes.

Please amend Claim 53 as follows:

53. (Amended) An apparatus for effecting the viscosity measurement of circulating blood in a living being, said apparatus comprising:

a lumen arranged to be coupled to the vascular system of the being;

a pair of tubes having respective first ends coupled to said lumen for receipt of circulating blood from the being, one of said pair of tubes comprising a capillary tube having some known parameters;

a valve for controlling the flow of circulating blood from the being's vascular system to said pair of tubes; and

an analyzer, coupled to said valve, for controlling said valve to permit the flow of blood into said pair of tubes whereupon the blood in each of said pair of tubes assumes a respective initial position with respect thereto, said analyzer also being arranged for operating said valve to isolate said pair of tubes from the being's vascular system and for coupling said pair of tubes together so that the position of the blood in said pair of tubes changes, said analyzer also being arranged for monitoring the blood position change in at least one of said tubes and calculating the viscosity of the blood based thereon, said analyzer comprising an indicator that generates an indication as to movement of the blood in at least one of said pair of tubes, said indicator comprising a speaker and a sound card that generate a sound

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having a frequency that is proportional to the movement of blood in at least one of said pair of tubes.

Please cancel Claims 54-55.

Please amend Claim 56 as follows:

56. (Amended) An apparatus for effecting the viscosity measurement of circulating blood in a living being, said apparatus comprising:

a lumen arranged to be coupled to the vascular system of the being;

a pair of tubes having respective first ends and second ends, said first ends being coupled together via a capillary tube having some known parameters;

a valve for controlling the flow of circulating blood from the being's vascular system to said pair of tubes, said valve being coupled to a second end of one of said pair of tubes and being coupled to said lumen; and

an analyzer, coupled to said valve, for controlling said valve to permit the flow of blood into said pair of tubes whereupon the blood in each of said pair of tubes assumes a respective initial position with respect thereto, said analyzer also being arranged for operating said valve to isolate said pair of tubes from the being's vascular system so that the position of the blood in said pair of tubes changes, said analyzer also being arranged for monitoring the blood position change in at least one of said tubes and calculating the viscosity of the blood based thereon, said analyzer comprising an indicator that generates an indication as to movement of the blood in at least one of